

Note-taking Worksheet

Weathering and Soil

Section 1 Weathering

- A. Effects of **weathering**—surface processes break rock down into small pieces called _____.
- B. _____—physical processes break rocks into fragments with the same chemical makeup and characteristics as the original rock.
1. Plant _____ and burrowing _____ cause mechanical weathering.
 2. _____—water enters cracks and freezes and expands, breaking rocks apart.
 3. Small pieces of rock have more _____ area than the original of rock and weather faster.
- C. _____—chemical reactions dissolve minerals in rocks or change them into different minerals.
1. Carbonic _____, formed from carbon dioxide gas and water, and plant acids can react with minerals to weather rock.
 2. _____—chemical process that occurs when iron is exposed to water and the oxygen in the air
- D. Effects of _____—pattern of weather that occurs in a particular area over many years.
1. Mechanical weathering is more rapid than chemical weathering in _____ climates.
 2. Chemical weathering is more rapid than mechanical weathering in _____, _____ climates.
 3. Rock type can affect _____ of weathering.

Section 2 The Nature of Soil

- A. Formation of **soil**—can take _____ of years
1. _____ is a mixture of weathered rock, decayed organic matter, mineral fragments, water, and air.
 2. Formation is influenced by _____, _____, types of _____, types of _____, and length of _____ that rock has been weathering.
- B. _____ of soil—the ingredients that make up soil
1. Clay, silt, and sand are small particles of _____.
 2. Decaying, dark-colored plant and animal material is called _____.
 3. Small spaces between soil particles may be filled with _____ or _____.

**Directed Reading for
Content Mastery****Section 1 ■ Weathering**

Directions: Complete the following paragraph using the terms listed below.

roots	ice wedging	moisture	oxygen	carbonic acid
chemical	oxidation	tropical	minerals	calcite
climate	deserts	mechanical	cracks	rock

Weathering is the surface processes that work to break down

1. _____. There are two main types of weathering.
2. _____ weathering occurs when rocks are broken apart by physical processes. When water enters cracks in rocks and freezes, expanding and breaking the rock apart, it is called 3. _____. In another type of mechanical weathering, plant 4. _____ seeking water and nutrients sometimes grow into 5. _____ in the rock and break the rock apart. 6. _____ weathering occurs when chemical reactions dissolve the 7. _____ in rocks or change them into different minerals. When water mixes with carbon dioxide gas in the air or soil, a weak acid, called 8. _____, forms. This acid dissolves minerals, such as 9. _____. When minerals containing iron are exposed to water and the 10. _____ in air, the iron may form a new mineral that is like rust. This process is called 11. _____. The rate of weathering is affected by 12. _____. Chemical weathering occurs more quickly in 13. _____ areas such as parts of South America. In 14. _____, chemical weathering is slower due to lack of 15. _____.

SECTION



Reinforcement

Weathering

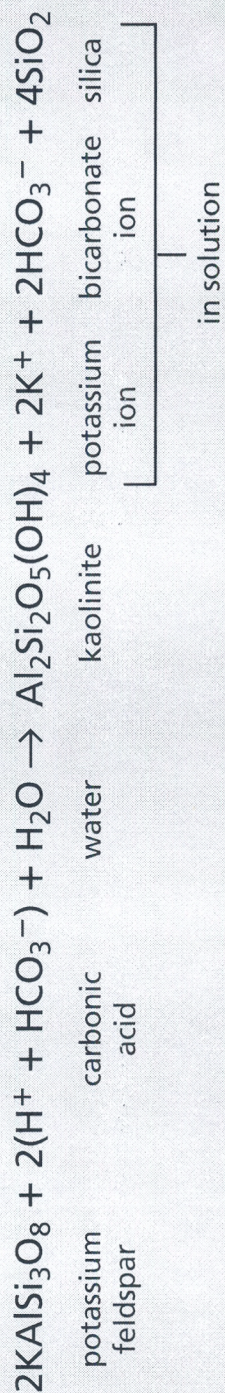
Weathering includes mechanical weathering and chemical weathering. Mechanical weathering occurs when rocks are broken apart by physical processes but the chemical makeup of the rock stays the same. Chemical weathering occurs when chemical reactions dissolve the minerals in rocks or change them into different minerals.

Directions: *Identify each statement below as an example of mechanical or chemical weathering. Write **M** for mechanical or **C** for chemical in the blank at the left.*

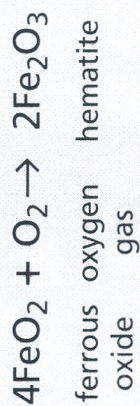
- _____ 1. the wedging of tree roots along natural joints in granite
- _____ 2. limestone dissolved by carbonic acid
- _____ 3. the oxidation of minerals that contain iron
- _____ 4. animal burrows dug in rock that let in water and air
- _____ 5. repeated freezing and thawing of water that cracks rock
- _____ 6. the action of water, salt, and air on car fenders
- _____ 7. acids from plants roots that break up rocks
- _____ 8. formation of potholes in streets during severe winters
- _____ 9. raised sections of sidewalk along tree-lined streets
- _____ 10. a small rock falling from a cliff
- _____ 11. feldspar mixing with water and producing clay minerals
- _____ 12. halite in rocks dissolving in water
- _____ 13. decaying plants dissolving minerals in rocks
- _____ 14. tree roots cracking the concrete foundation of a house
- _____ 15. iron lawn furniture rusting outside
- _____ 16. more rapid in tropical climates
- _____ 17. carbonic acid weathering limestone
- _____ 18. leaves decaying in the forest

Chemical Weathering

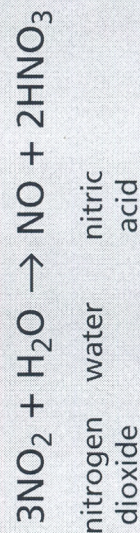
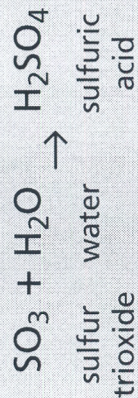
Hydrolysis



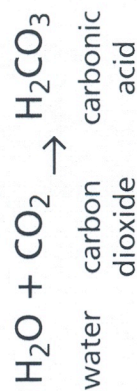
Oxidation



Acid Precipitation Formation



Carbonic Acid Formation



Chemical Weathering

1. What is chemical weathering?

2. What is hydrolysis?

3. According to the chemical equation, what happens to potassium feldspar during hydrolysis?

4. How is carbonic acid formed, and what is its role in chemical weathering?

5. What substances react and form during oxidation?

6. Which chemical processes shown involve carbon acid?

7. What substances react during the formation of acid precipitation?

8. What products result from acid precipitation formation?

9. Which chemical processes shown involve H_2O ?
